REMARKS

Claims 1-15 were pending in the current application. Applicants have amended claims 1, 3, 6, 8, 11, and 13, and added new claims 16-20. Reexamination and reconsideration of all of the claims are respectfully requested.

§103

The Office Action rejected claims 1-15 under 35 U.S.C. §103 based on allegedly admitted prior art (AAPA) in view of Huang, U.S. Patent 6,268,840 ("Huang"). The Office Action also rejected claims 1-15 under 35 U.S.C. §103 based on AAPA in view of Hayashi et al., U.S. Patent 5,541,619 ("Hayashi").

Independent claims 1, 6, and 11

Applicants have amended independent claims 1, 6, and 11 to specifically point out and claim that the waveform claimed provides a tendency to reduce of ion shadow defects and visible artifacts being exhibited by the segmented pi-cell modulator. Such a tendency to reduce is not provided in AAPA, Huang, or Hayashi. AAPA does not discuss tendency to reduce the unwanted effects noted, and as previously noted, neither Huang nor Hayashi has anything to do with segmented pi-cell modulators, nor ion shadow defects or visible artifacts. The most that can be said of the Huang and Hayashi references is that they include waveforms having limited resemblance to the waveforms claimed. Applicants continue to dispute the combination of AAPA with Huang or Hayashi.

AAPA and Huang

Huang discloses a display comprising "a flat sheet of bistable chiral nematic liquid crystal material activated by a drive circuit..." Abstract. Certain waveforms applied to the bistable chiral nematic liquid crystal material are provided, where "the frequency and timing of the unipolar waveforms is [sic] controlled by the display driver circuitry to generate desired bi-polar voltages across picture elements or pixels of the

display." *Id.* The Office Action relies on FIG. 25B of Huang, which is said to "illustrate [with FIG. 25A] an alternate drive scheme for activating a liquid crystal display *that lowers the drive circuitry switching frequency.*" Col. 3, ll. 59-61 (emphasis added). Applicants specifically note that FIG. 25B does not include periods of de minimis energy application, an aspect required by certain pending claims. The waveform of FIG. 25B appears to be energized to some level at all times.

Applicants submit that (1) the newly added limitations in claims 1, 6, and 11 serve to differentiate from both AAPA and Huang, and (2) it would not be obvious to combine the teaching of a unipolar drive waveform for a display using nematic liquid crystal material, as disclosed in Huang, with AAPA, namely a segmented pi-cell modulator driven by an alternating polarity waveform.

AAPA does not show a design wherein "applying the first modulating waveform and second modulating waveform to the segmented pi-cell modulator tends to reduce likelihood of at least one from a group comprising ion shadow defects and visible artifacts being exhibited by the segmented pi-cell modulator" (claim 1). Applicants' specification does not disclose this aspect except with respect to the solution provided by the invention. Huang also does not show a design wherein applying a modulated waveform tends to reduce likelihood of ion shadow defects or visible artifacts being exhibited a segmented pi-cell modulator. Aside from the fact that no segmented pi-cell modulator is disclosed in Huang, the reference does not disclose a specific waveform tending to reduce the likelihood of ion shadow defects or visible artifacts.

Regarding the combination of AAPA and Huang, Applicants note that the differences in performance and operation of nematic LCs and surface mode LCs (pi-cells) have critical significance such that techniques applicable to one type of LC often have no relevant corollary to another type of LC.

Huang does not teach or suggest a modulator, much less a segmented modulator, nor the use of pi-cell liquid crystal material for the modulator. To the contrary, Huang discloses a drive method for a display that uses nematic liquid crystal material. The

physical and optical properties of nematic cells are significantly different than those of surface mode or pi-cells. As described in the background of Applicants' disclosure, the operation of a nematic LC device is due to optical activity when light traverses the bulk of the LC material. A pi-cell, however, operates due to a phase shift created by retardation at or near the surface layer. This phase shift allows the pi-cell to modulate light rather than deflect light. Thus, the problems and solutions associated with one type of LC material are not necessarily common or even relevant to the problems and solutions associated with another type of LC material.

Huang is clearly limited to nematic LCs. For example, in the FIELD OF THE INVENTION, Huang says that "[t]he present invention concerns a visual display utilizing a chiral nematic," (col. 1, ll. 17-18) and in the DETAILED DESCRIPTION, that "[t]he display 10 is constructed using a reflective bistable chiral nematic liquid crystal material." (col. 4, ll. 27-28). Further, nematic LCs are known to switch states faster than pi-cells., and thus, the drive problems associated with nematic LCs are not the same as drive issues associated with surface mode LCs (pi-cells).

Thus, Applicants submits that there is no teaching or suggestion, nor is there any motivation, in either cited reference, to modify the AAPA to incorporate a technique applicable only to nematic LCs.

For the foregoing reasons, Applicants submit that claims 1-20 as pending are patentable over the cited combination.

AAPA and Hayashi

Like Huang, Hayashi is a typical liquid crystal display using nematic LC material. Further, Hayashi is completely unconcerned with acting as a modulator - it deals with a display.

As noted, AAPA does not show a design wherein applying a modulated waveform tends to reduce likelihood of ion shadow defects or visible artifacts being exhibited a segmented pi-cell modulator. Applicants' specification does not disclose this aspect

except with respect to the solution provided by the invention. Like the AAPA, Hayashi does not show "applying the first modulating waveform and second modulating waveform to the segmented pi-cell modulator tends to reduce likelihood of at least one from a group comprising ion shadow defects and visible artifacts being exhibited by the segmented pi-cell modulator" (claim 1). Aside from the fact that no segmented pi-cell modulator is disclosed in Hayashi, this reference does not disclose a specific waveform tending to reduce the likelihood of ion shadow defects or visible artifacts. There is again no teaching or suggestion, nor is there any motivation, in either cited reference, to modify the AAPA to incorporate a technique applicable only to nematic LCs.

Thus, for all the same reasons presented above, Applicants submit that claims 1-20 as pending are patentable over the cited combination of AAPA with Hayashi. There is no teaching, suggestion, or motivation, to incorporate a drive waveform for a nematic LC display into a pi-cell modulator.

Motivation to Combine – Hindsight

As noted, there is no motivation to combine the teachings of AAPA with either Huang or Hayashi present in the references themselves. However, the Examiner has failed to make a prima facie case for obviousness because there is no adequate teaching, suggestion, or motivation to combine AAPA with either reference either explicitly or implicitly in the references themselves or in the general state of the art.

The standard for making an obviousness rejection is set forth in MPEP 706.02(j):

> To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success

> must both be found in the prior art and not based on applicant's disclosure. [citations omitted]
>
> The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985).

The Office Action fails to meet this burden. Although the Examiner has tried to describe how one skilled in the art would have been motivated to modify AAPA to incorporate the teachings of Huang or Hayashi to find the tables, these descriptions fall short.

The motivation to combine the references alleged in the Office Action is that the signals of Huang or Hayashi would be "in order to reduce flickering on the picture, resulting in an improvement in picture quality [Hayashi]..." Office Action, p. 4. This is nothing more than an end result gleaned from general language in the reference, not a motivation to employ the pi-cell modulator design in the Hayashi device. It is disingenuous and overly simplistic to say that an alternative design "may" or "can" be created. Alternatives may always be created or produced. However, the AAPA specifically contemplates using the waveform of FIGs. 2 or 5 of the present application without any need, suggestion, or motivation to employ an alternate design such as the design of Huang or Hayashi in accordance with the claimed limitations. Neither Huang nor Hayashi suggest using a pi-cell modulator arrangement such as is disclosed in the alleged asserted prior art.

As noted, the PTO has the burden of establishing a prima facie case of obviousness under 35 U.S.C. § 103. The PTO must show that some objective teaching in the prior art or knowledge generally held by one of ordinary skill would lead an individual to combine the relevant teachings of the references. *In re Fine*, 837 F.2d 1071,

1074 (Fed. Cir. 1988). Therefore, a combination of relevant teachings alone is insufficient grounds to establish obviousness, absent some teaching or suggestion to do so. *Id.* at 1075. In this case, the Office Action does not point to any teaching or suggestion in the cited references that would lead an artisan to come up with the claimed invention.

The Federal Circuit has held that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination. *ACS Hospital System, Inc. v. Montefiore Hospital*, 732 F.2d 1572 (Fed. Cir. 1984). Without some showing in the prior art that suggests in some way a combination in order to arrive at the claimed invention, it is impermissible to use the Applicants' teaching to search references for the claimed elements and combine them as claimed. *In Re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991); *In Re Laskowski*, 871 F.2d 115, 117 (Fed. Cir. 1989); *see also, Ex Parte Lange*, 72 U.S.P.Q. 90, 91 (C.C.P.A. 1947) ("It seems to us that the Examiner is using Applicant's disclosure for the suggestion of the combination since there is no suggestion in any of the patents for their combination in the manner claimed by Applicant."); *In re Leonor*, 158 U.S.P.Q. 20, 21 (C.C.P.A. 1968) (the issue is "whether teachings of prior art would, of themselves, and without benefit of applicant's disclosure, suggest [a process] which would make claimed invention obvious...") (emphasis in original). As noted, the AAPA reference does not suggest using a specific waveform as claimed to produce the unique design of Applicants' independent claims 1, 6, and 11, as amended.

Applicants submit that the Office Action uses hindsight in rejecting the claims herein. It is only through hindsight, after seeing Applicants' disclosure, that it would be considered possible to create the system as claimed by the Applicants. With regard to the use of hindsight, or the use of an Applicant's teaching to combine references, the courts have overwhelmingly condemned such combinations and have upheld the validity of patents or claims of patents in which such hindsight was employed to combine the references. *W.L. Gore Associates, Inc. v. Garlock, Inc.*, 220 U.S.P.Q. 303, 313 (Fed. Cir. 1983), (condemning the "insidious effect of a hindsight syndrome wherein that which only the inventor taught is

used against its teacher"); *In re Fine*, 837 F.2d at 1051 ("One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention.") Applicants respectfully submit that combination of aspects of the AAPA reference with the "common knowledge" is merely a hindsight reconstruction of the invention using Applicants' disclosure and attempting to use Applicants' claims as a guide. Such hindsight reconstruction of the claimed system is inappropriate and thus rejection of the independent claims for this reason is improper.

Applicants therefore submit that there is no motivation to combine the teachings of AAPA with either Huang or Hayashi present in the references themselves, and it is only through the use of impermissible hindsight that one could construct the invention as claimed. Thus claims 1, 6, and 11, as amended, are not obvious in view of the cited references.

Dependent claims

Claims depending from allowable claims 1, 6, and 11 are allowable as they include limitations not found in the cited reference based at least in part on their dependence from allowable base claims. However, Applicants separately argue the propriety of certain dependent claim rejections, namely the "stutter start" dependent claims and "short rest period" claims 5, 10, and 15.

"Stutter Start" claims

Applicants specifically points to the rejection of claims 3, 4, 8, 9, 13, and 14 at pages 3 and 5 of the Office Action. These can generally be referred to as the "stutter start" claims, and are rejected based on the present specification at page 2, lines 24-29. Office Action, pages 3 and 5. The cited passage recites:

> The traditional technique for driving pi-cells has been to use a waveform modulated by a carrier with a frequency of one to two kHz. However, we have found that for pi-cell parts made in some factories, the technique is not a good one. **We have**

therefore created a unique driving approach using a modified carrier waveform, and in addition, what we term a "stutter start," to overcome the artifacts described above.

(emphasis added)

This describes the solution to the current problem being use of a "stutter start," described in the specification and forming a part of the current claims, not an admission that a stutter start is prior art or was otherwise known at the time of the application. Presence of this statement in the Background section of the specification is immaterial – what is being said is that the current design employs a stutter start to overcome the previous problems identified by Applicants. Applicants therefore submit that the stutter start claims are not shown in any of the cited references, alone or in combination, and dispute the argument made in rejecting these claims.

Claims 5, 10, and 15

The Office Action further rejects claims 5, 10, and 15 while admitting that the "prior art figures [presumably Huang, FIG. 25B and Hayashi, FIG. 7E or 7F] [do] not specifically teach the small rest period is approximately 100 milliseconds." Office Action, p. 3; see also, Office Action, p. 5. However, the Office Action asserts this 100 millisecond short rest period would have been obvious, without citing a reference.

Applicants again note that neither FIG. 25B of Huang nor FIG. 7E or 7F of Hayashi show a rest period or time in which de minimis energy is applied. Applicant submits that the Office Action is simply making this allegation with no support in an effort to deprecate Applicants' invention.

The Office Action therefore relies on no specific reference in rejecting the limitation "wherein the small rest period is approximately a few hundred milliseconds." Rather, such a rejection relies in part on purported knowledge of one skilled in the art at the time of the invention. Thus in accordance with 37 C.F.R. § 1.104 (d)(2) and to preserve Applicants' argument on appeal, Applicants request that the Examiner provide

an affidavit that supports the rejection of the claims based on the official notice, common knowledge, or personal knowledge of the Examiner, or provide a reference demonstrating the purported common knowledge. *See In re Lee*, 277 F.3d 1338, 1344-45, 61 U.S.P.Q.2d 1430, 1435 (Fed. Cir. 2002) (finding that reliance on "common knowledge and common sense" did not fulfill the PTO's obligation to cite references to support its conclusions, as PTO must document its reasonings on the record to allow accountability and effective appellate review); *see also, In re Zurko*, 59 USPQ2d 1693 (Fed. Cir. 2001) ("This assessment of basic knowledge and common sense was not based on any evidence in the record and, therefore, lacks substantial evidence support. ... With respect to core factual findings in a determination of patentability, however, the Board cannot simply reach conclusions based on its own understanding or experience -- or on its assessment of what would be basic knowledge or common sense"); Manual of Patent Examining Procedure 2144.03 ("If the applicant traverses [] an assertion [that a concept is 'well known' or 'matters of common knowledge'] the examiner should cite a reference in support of his or her position."). Applicant requests the Examiner produce a reference or references showing a small rest period of less than approximately 100 milliseconds in connection with an alternating, unipolar-carrier waveform applied to a segmented pi-cell modulator, wherein the carrier waveform does not change polarity within a time period that the segmented pi-cell modulator is energized, together with a motivation to combine the references found within the references themselves, or the Examiner produce an affidavit in support of the rejection.

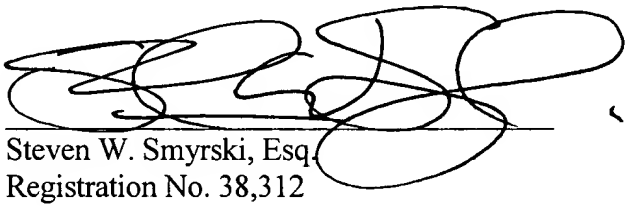
Applicants therefore submit that all claims, as amended, are allowable in view of § 103.

CONCLUSION

In view of the foregoing, it is respectfully submitted that all claims of the present application are in condition for allowance. Reconsideration of all of the claims, as amended, is respectfully requested and allowance of all pending claims at an early date is solicited.

Applicants believe that no fees are due in accordance with this Amendment beyond those included herewith. Should any additional fees be due, the Commissioner is hereby authorized to charge any deficiencies or credit any overpayment to Deposit Account 502026.

Respectfully submitted,



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